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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/748,979	12/30/2003	Koji Mishima	890050.454	8832

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EXAMINER	
ANGEBRANNDT, MARTIN J	
ART UNIT	**PAPER NUMBER**
1795	
MAIL DATE	**DELIVERY MODE**
12/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/748,979	MISHIMA ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 October 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17-27,29 and 31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17-27,29 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10/5/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 17-27, 29 and 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is not clear what the language "at least one of the recording layers contains the elements selected from the group consisting of S,O,C, and N and the at least one metal different from the element M and selected from the group consisting of Mg, Al, and Ti in a form of a compound thereof" means.

It is not clear if the applicant intends this to means a chemical compound or compounding in the general sense (ie.- formed by compounding or combining parts, mixing). The interpretation of the claims for the purposes of applying art is discussed below. The claims should be amended to clarify the language.

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 17-27, 29 and 31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The applicant has not pointed out where a basis for the recording layers including a compounds of O,S,C or N with Mg, Ti, or Al can be found in the specification. The examples on pages 52, 84,90 and 98, show these sputtered as pure elements, not compounds. The applicant

must cancel the new matter in the next response if proper support for the added language cannot be found. At [0048-0049], it seems clear that the compounds are of the elements M and O,S,C or N, with SiO_2, La_2O_3, Si_3N_4 and ZnS being exemplified.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 17-25 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. '752 and Takahashi et al. '706, in view of JP 54-133134.

Suzuki et al. '752 teaches in working example 21, a recording layer having a 20 nm Bi/ZnS/ SiO_2 layer in contact with a 14 nm In layer. (table 2/col 15). Working example 27 includes a 20 nm In/ZnS/ SiO_2 layer in contact with a 30 nm Te layer. The embodiment of figure 4 has two recording media comprising the recording bilayers (3/4) provided on a substrate and coated with a protective layer (5) and adhered together via an adhesive layer 8. The protective layer can be the materials listed at 10/62+ and may have a thickness of 5-200 nm. (10/63-11/10). There may be an interlayer of the materials disclosed in column 10 and may have a thickness of 10-20 nm (10/23-52). There may be a bedding layer to protect the substrate (9/59-10/22). The second recording layer (4) may be As, Se, Sb, Te or Bi and may have additives of Ag, Cu, Ge, In, Si, ZnS, nitrides, oxides, phosphides or sulfides included (6/59-7/35) and a thickness of preferably 5-50 nm (8/46-54). The first recording layer. The first recording layer can include

various metals including Cu, Si, Ge, Sn, In, Pb, Zn and can have additives such as MoS_2, MgF_2, NiS, NiS_2, Cu_2S, ZnS, In_2O_3, In_2S_3, GeS, GeS_2, SnS, SnS_2, PbS, Bi_2S_3, MoO, InO, GeO, PbO, SiO, SiO_2, SiC, TiC and others. The thickness of the first recording layer can be 5-50 nm (8/30-40).

Takahashi et al. '706 teach useful metals for the heat mode recording layer including In, As, Sb, Bi, Se, Te, Mg, Al and Ti. (3/52-58). Additives including various oxide, fluoride and sulfides, including PbO, WO_3, TiO_2, SiO, SiO_2, ZrO_2, GeS, GeS_2, MoS_2, NiS, MoO, InO, In_2O, GeO, and sulfides, selenides or tellurides of Ge, In,Sn, Cu, Ag, Fe, BI, Al, Si, Zn, and V, can be added to increase the sensitivity either as a separate layer or being mixed with the metal. (4/1-33). The thickness when the recording layer is a single layer, rather than a laminate is 5-2000 nm. (3/59-63).

JP 54-133134 teaches alternative layers of Indium oxide (5 nm) and Manganese oxide (2 nm) until a thickness of 540 nm is achieved. This is written upon using a 488 nm argon ion laser (upper left and right columns and lower left column on page 5). Example 3 discusses the dispersion of the components in a single layer as shown in figure 2, rather than the alternating layer embodiments illustrated in figures 1,3 and 4.

It would have been obvious to one skilled in the art to modify example 21of Suzuki et al. '752 by adding other known dielectric materials including TiC or the like to the second recording composition and forming a composite layer, rather than a bilayer as taught by Takahashi et al. '706 and JP 54-133134 and providing a protective layer and adhering the recording media together as shown in figure 4 to double the recording capacity. This results in a recording medium with two recording layers having thicknesses of 5-50 nm (This allows the interpretation

of the Ti as a chemical compound with carbon (C)) and/or it would have been obvious to modify the example of Takahashi et al. '706 by replacing the GeS with TiO_2 or Al_2S_3 based upon the disclosure at (4/6-19) and adhering the recording media together through the protective layers as shown in figure 4 of Suzuki et al. '752 to double the recording capacity noting the use of bilayers or composite layers in both Takahashi et al. '706 and JP 54-133134 (This allows the interpretation of the Ti as a chemical compound with oxygen (O) or Al with sulfur (S)).

If it is found that the claims should be interpreted to means that the element M is present as a chemical compound with O,S,C or N, the following statement of rejection applies: it would have been obvious to modify the example of Takahashi et al. '706 by replacing the In with Mg, Ti or Al based upon the disclosure at (3/52-58) and adhering the recording media together through the protective layers as shown in figure 4 of Suzuki et al. '752 to double the recording capacity noting the use of bilayers or composite layers in both Takahashi et al. '706 and JP 54-133134.

In response to the arguments, the examiner notes that the claims rejected under this heading are silent with respect to the composition of the furthest recording layer. The claims merely are describing the composition of the other recording layer(s). Aside from the 112 issues addressed above, the examiner notes that the use of Bi/In and TiC is reasonably taught in Suzuki et al. '752 and that the combination of In, As, Sb, Bi, Se, Te, Mg, Al or Ti with PbO, WO_3, TiO_2, SiO, SiO_2, ZrO_2, GeS, GeS_2, MoS_2, NiS, MoO, InO, In_2O, GeO, and sulfides, selenides or tellurides of Ge, In, Sn, Cu, Bi, Al, Si, or Zn in forming a recording layer is taught by Takahashi et al. '706, which renders obvious combination including of In or Bi with TiO_2 or sulfides of Al, or the case of Mg, Al or Ti with PbO, WO_3, SiO, SiO_2, ZrO_2, GeS, GeS_2, MoS_2, NiS, MoO, InO,

In_2O, GeO, or sulfides of Ge, In, Sn, Cu, Bi, Si, or Zn. The teachings of Takahashi et al. '706 and JP 54-133134 address the issue of the equivalence of the bilayer and composite layer embodiments. The reflectance issue raised by the applicant would have to specify the relative amounts of the materials to be commensurate in scope with the argued position. The examiner notes that there seems to be a 112 issue of enablement with the argued position as discussed above and when the composite layer is used, there are two different metals, with one being reacted with C,O,N, or S to proved the change in particle size of the metal which is not part of a compound. The examine does note the data in the specification at pages 52, 84,90 and 98 of the instant specification, but notes the composition are outside of the scope of coverage sought and therefore are not able to support the position of unobviousness. The rejection stands as modified.

8. Claims 17-27 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. '752 and Takahashi et al. '706, in view of JP 54-133134, further in view of (Takaoka et al. '321 or Mizushima et al. JP 2003-054135) combined with Nee '334 and Nishida et al. '881.

Takaoka et al. '321 teach optical recording media with multiple bilayer recording composites which are separated by intermediate layers. (see figure 10)

Mizushima et al. JP 2003-054135 (machine translation attached) teaches with respect to figure 7 a recording medium having plural recording bilayers separated by an intervening layer (TL). DL-1 had layers 4 and 6 nm thick and DL-2 had layers 3 and 5 nm thick. [0103-0113]. Dl-2 is closer to the laser light incident side.

Nee '334 teaches optical recording media where the there are three recording layers with respect to figure 4. The reflectivity of the layers is different with the further layers being more

reflective while the nearer layers are partially transmissive to allow accessing of all of the recording layers [0046].

Nishida et al. '881 teach multilayered recording media with four recording layers on each of the substrates with respect to figure 3 (12/65-13-/52). The multilayered recording media are not limited to read only media, but may include writable recording layers (15-17, fourth embodiment and 29/30-51).

To address embodiments bounded by the claims, but not rendered obvious above, the examiner holds that it would have been obvious to one skilled in the art to modify the media rendered obvious by the combination of Suzuki et al. '752, Takahashi et al. '706 and JP 54-133134 by adding more recording layers (ie a third or fourth) as taught by Nee '334 and Nishida et al. '881 to increase the information density of the medium as a whole with a reasonable expectation of success based upon the known use of recording media in the art which have plural recording bilayer recording layers as evidenced by Takaoka et al. '321 or Mizushima et al. JP 2003-054135. Further it would have been obvious to vary the thicknesses of the recording layers and to use other recording layers as the furthest recording layer/bilayer based upon the teachings of these in multiple recording layers systems by Takaoka et al. '321 or Mizushima et al. JP 2003-054135.

To address the applicant's argument relating to the absence of plural recording bilayers in Suzuki et al. '752 and Takahashi et al. '706, in view of JP 54-133134 on page 20 of the response, the examiner points to Takaoka et al. '321 or Mizushima et al. JP 2003-054135 as well as the double sided recording medium of Suzuki et al. '752 which establish that it is known in the art to have alloying type recording media with plural recording bilayers. There is no issue of

functionality as long as these are separated by more than the depth of field of the focused laser beam. Were the claims to require that all the recording layers be accessed from the same side and the laser operating in the UV (this layer will contain a UV absorber to make it UV curable) , the presence of the adhesive layer in Suzuki et al. '752 might be an issue, but currently the claims do not include these limitations and clearly both substrates are transparent. Meeting the substrate and light transmission layer limitations. The response to the arguments concerning Nee '334 and Nishida et al. '881 is similar, the laser used by the applicant and in the references are in the visible and the claims do not require that all the recording layers be accessible from the same side. The applicant's arguments are further undercut by the fact that the instant application uses a UV curable layer as a protective layer as discussed at [0196] of the prepub of the instant application, which is similar in composition to a UV curable adhesive or other UV curable layers disclosed by the references.

The rejection stands as modified for the reasons above without further comment as no further arguments were presented.

9. Claims 17-27,29 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. '752 and Takahashi et al. '706, in view of JP 54-133134, further in view of (Takaoka et al. '321 or Mizushima et al. JP 2003-054135) combined with Nee '334 and Nishida et al. '881 combined with Shuy et al. '160.

Shuy et al. '160 teaches a transparent layer of Ge, Si, GaP, InP, GaAs, InAs, ZnSb, TiO_2, Sb-Zn oxide as a transparent layer (30) in a thickness of 5-500 nm and reflective layer (40) may be Ag, Al, Au, Pt, Cu, Sn, Ir, Ta and alloys and/or combinations thereof in a thickness of 1-500 nm. [0026-0027]. The examples use silicon and gold as the materials. In figure 1A, the provision

of thermal manipulation layers (dielectric layers) is disclosed and the use of protective layers is disclosed. (60). Shuy et al. '160 further teaches in embodiment 4 that a substrate (10) with a layering sequence of ZnS-SiO_2/ Si/ (Si-Au)/(ZnS-SiO_2)$_2$ is formed. The recording uses 1-5 V pulses at 780 nm. The examples use 2 or 3V.

In addition to the basis provided above, it would have been obvious to one skilled in the art to modify the media resulting from the combination of Suzuki et al. '752 and Takahashi et al. '706, in view of JP 54-133134 and either of (Takaoka et al. '321 or Mizushima et al. JP 2003-054135) with Nee '334 and Nishida et al. '881 by using other alloying recording layers, such as the Ge/Si layers taught by Shuy et al. '160 for the furthest recording layer with a reasonable expectation of forming a useful optical recording medium based upon both Takaoka et al. '321, Mizushima et al. JP 2003-054135 and Shuy et al. '160 using alloying bilayers as the recording layers.

On pages 17-18 of the response, the applicant asserts that the alloying/mixing of the bilayers of Shuy et al. is different from that of Suzuki et al. '752, Takaoka et al. '321, Mizushima et al. JP 2003-054135, Takahashi et al. '706 and JP 54-133134. This position is without merit as the mechanism in all these references involves mixing of the different components and all the references specifically disclose bilayer recording media, where the laser heats these and cause mixing/alloying of the different components. They are in fact analogous.

The rejection stands as modified for the reasons above without further comment as no further arguments were presented.

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible

harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 17-27,29 and 31 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1,5,9,13 and 17-18 of copending Application No. 10/956010 (2005/0118530), in view of Takaoka et al. '321.

It would have been obvious to one skilled in the art to modify the invention of application 10/956010 by using plural recording layers as taught by Takaoka et al. '321 to increase recording capacity.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The applicant may file a terminal disclaimer.

12. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Martin J Angebranndt
Primary Examiner
Art Unit 1795

12/18/2007